

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-1-91

Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

CATERPILLAR, INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43000.5, 43013 and 43018 of the Health and Safety Code; and,

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the following Caterpillar, Inc. 1999 model-year engine, with rated power between 175 and 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Industrial Equipment

Fuel Type: Diesel

<u>Engine Family</u>	<u>Liters</u>	<u>(Cubic Inches)</u>	<u>Exhaust Emission Control Systems and Special Features</u>
XCPXL27.0MRH	27.0	(1656)	Turbocharger Smoke Puff Limiter Charge Air Cooler

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM) certification exhaust emission standards, in grams per brake horsepower-hour (g/bhp-hr), and the opacity of smoke emission standards, in percent (%), during acceleration (Accel), lugging (Lug), and peak (Peak) modes, for this engine family are (Title 13, California Code of Regulations, Section 2423):

<u>Exhaust Emissions (g/bhp-hr)</u>				<u>Smoke Opacity (%)</u>		
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
1.0	8.5	6.9	0.4	20	15	50

The THC, CO, NOx and PM exhaust emission certification values, in g/bhp-hr, and the opacity of smoke emission certification values, in percent (%), for this engine family are:

<u>Exhaust Emissions (g/bhp-hr)</u>				<u>Smoke Opacity (%)</u>		
<u>THC</u>	<u>CO</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
0.1	1.9	6.4	0.2	18	8	26

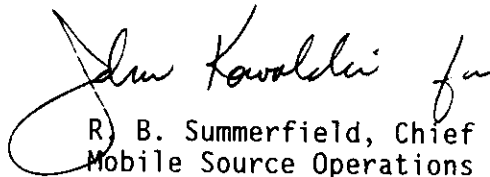
BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with the "Emission Control Labels--1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Section 2425 et seq.).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

Executed at El Monte, California this 16th day of December 1998.


R. B. Summerfield, Chief
Mobile Source Operations Division

LARGE ENGINE MODEL SUMMARY

10/21/98

EO:U-R-1-91

Manufacturer: CATERPILLAR INC.

Process Code: New Submission

EPA Engine Family: XCPXL27.0MRH

Manufacturer Family Name: NA

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
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Note: Peak HP	and Peak Torque	fuel rates are	nominal values.	Due to product-	ion engine avgs.	these fuel rates	may change.	
1 - Cert Engine	3412	750 @ 1800	220	266.1	2430 @ 1350	248	225.0	EM, DI, TC, SPL,
2	3412	725 @ 1800	213	257.7	2328 @ 1350	238	216.3	EM, DI, TC, SPL,
3	3412	715 @ 1800	210	253.8	2287 @ 1350	234	212.4	EM, DI, TC, SPL,
4	3412	650 @ 1800	190	230.0	2039 @ 1350	209	189.7	EM, DI, TC, SPL,
5	3412	625 @ 1800	182	220.9	1949 @ 1350	200	181.4	EM, DI, TC, SPL,
6	3412	750 @ 1900	211	269.9	2393 @ 1350	245	222.6	EM, DI, TC, SPL,
7	3412	750 @ 2000	203	273.5	2342 @ 1400	237	222.9	EM, DI, TC, SPL,
8	3412	725 @ 2000	196	263.6	2244 @ 1400	227	213.4	EM, DI, TC, SPL,
9	3412	750 @ 2100	195	276.1	2289 @ 1400	231	217.8	EM, DI, TC, SPL,
10	3412	725 @ 2100	188	266.0	2187 @ 1400	222	209.1	EM, DI, TC, SPL,
11	3412	700 @ 2100	182	256.6	2084 @ 1400	211	198.9	EM, DI, TC, SPL,
12	3412	650 @ 2100	169	238.5	1896 @ 1400	192	181.2	EM, DI, TC, SPL,